

MONTANA DIABETES SURVEILLANCE & CLINICAL COMMUNICATION



Montana Department of Public Health and Human Services
Chronic Disease Prevention and Health Promotion Program
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PREVENTIVE CARE PRACTICES AMONG PERSONS WITH DIABETES— UNITED STATES AND MONTANA, 1995 AND 2001.

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BACKGROUND

Effective interventions are available to persons with diabetes that can prevent or delay the development of serious health complications such as lower limb amputation, blindness, kidney failure, and cardiovascular disease.¹⁻⁴ However, the use of preventive care practices is lower than recommended,^{5,6} and the national health objectives for 2010 aim to improve care for all persons with diabetes.⁷ To assess progress toward meeting these goals, Centers for Disease Control and Prevention (CDC) analyzed data including influenza and pneumococcal vaccination coverage, from the Behavioral Risk Factor Surveillance System (BRFSS). BRFSS is a state-based, random digit-dialed telephone survey of the noninstitutionalized U.S. population aged ≥ 18 years. This report presents the findings from 1995 and 2001, which indicate that levels of preventive care practices among persons with diabetes in Montana and in the United States increased, but further efforts are needed to improve care among persons with diabetes, reduce the burden of diabetes-related complications, and achieve the national health objectives.

This report is based on recent analyses published in the Morbidity and Mortality Weekly Review presenting national trends in preventive care practices among persons with diabetes in the United States. Data from Montana have been incorporated into the figures.

METHODS

BRFSS surveys are conducted in all 50 states, the District of Columbia, and three U.S. territories. Persons with diabetes were defined as respondents who answered “yes” to the question, “Has a doctor ever told you that you have diabetes?” Women who were told that they had diabetes only during pregnancy were not included. Persons who reported that they had diabetes were asked questions from the diabetes module on preventive care practices, including: “When was the last time you had an eye exam in which the pupils were dilated?” (eye examination); “About how many times in the last year has a health professional checked your feet for any sores or irritations?” (foot examination); and “About how often do you check your blood for glucose or sugar?” (self-monitoring of blood glucose at least once daily [SMBG]). All BRFSS respondents were asked two additional questions: “During the past 12 months, have you had a flu shot?” (influenza vaccination) and “Have you ever had a pneumonia shot?” (pneumococcal vaccination).

A total of 35 states (including Montana) had information from the diabetes module for both 1995 and 2001. The median response rate was 68.7% for 1995 (range: 48.6%–84.5%) and 52.1% for 2001 (range: 33.3%–70.8%). Data were weighted to reflect the age, sex, and racial/ethnic distribution in each of the 35 states. The proportion of persons with diabetes who received each of the preventive care

services and vaccinations was assessed by year. Age-specific rates for the United States in 1995 and 2001 are presented, and rates for selected characteristics are age-adjusted to the 2000 U.S. standard population. The age-adjusted rates for eye and foot examinations and SMBG are presented for each year from 1995 to 2001, and the age-adjusted rates of influenza and pneumococcal vaccinations are presented for 1995, 1997, 1999, and 2001 for Montana and the United States.⁸ All analyses were conducted by using SAS v8 software with SUDAAN to estimate standard errors and test for significant differences in rates between 1995 and 2001.

RESULTS

The age-adjusted rates of all preventive care practices increased from 1995 to 2001 in the U.S. (Figures 1-5). In the U.S., the proportion of adults with diabetes reporting an annual eye examination increased from 59% to 66%, foot examination from 56% to 62%, SMBG increased 41% to 56%, influenza vaccination from 38% to 44%, and pneumococcal vaccination from 20% to 35%. In Montana, the age-adjusted rates of all preventive care practices also increased from 1995 to 2001 (Figures 1-5). The proportion of adult Montanans with diabetes reporting an annual eye examination increased from 65% to 68% from 1995 to 2001, foot examination from 51% to 78%, SMBG from 31% to 68%, influenza vaccination from 51% to 60%, and pneumococcal vaccination from 36% to 50%.

Figure 1. Age-adjusted rates of annual dilated retinal examinations among adults with diabetes in the United States and Montana, 1995 and 2001.

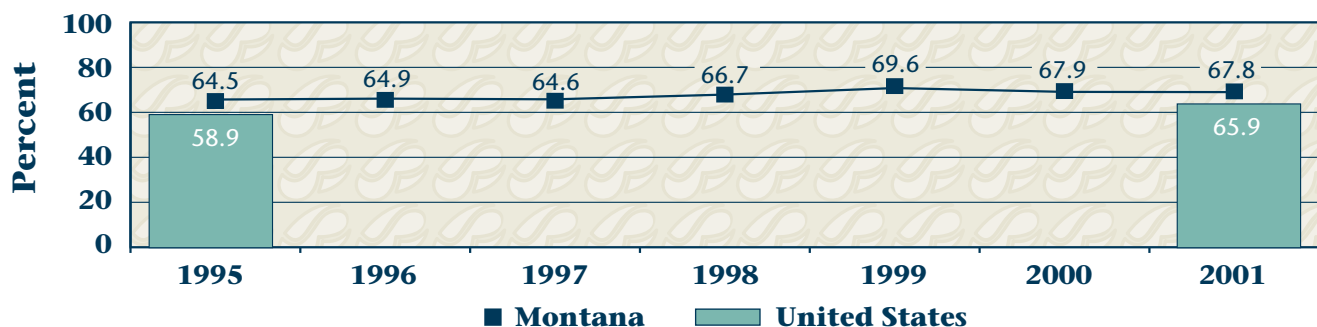


Figure 2. Age-adjusted rates of annual foot examinations among adults with diabetes in the United States and Montana, 1995 and 2001.

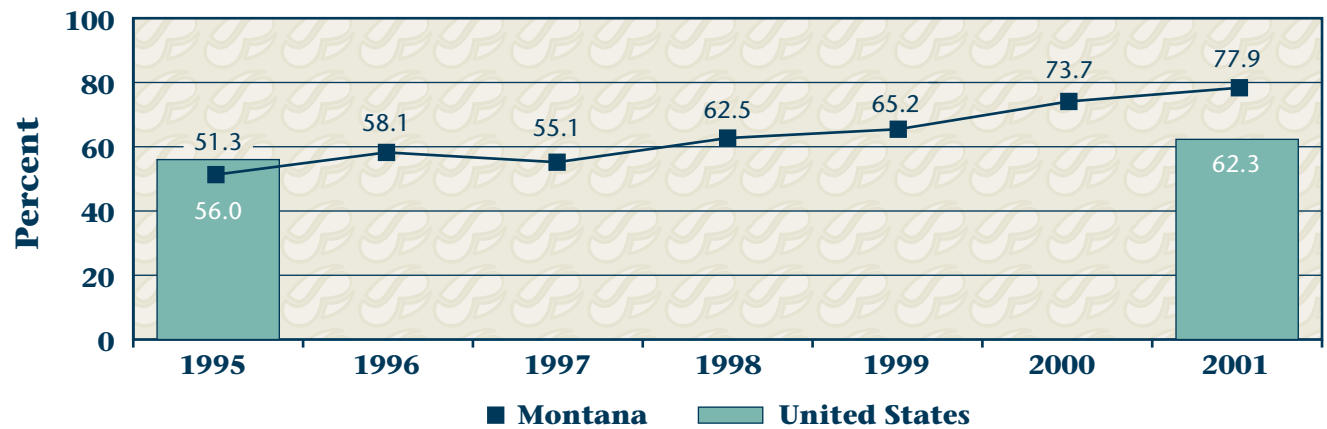


Figure 3. Age-adjusted rates of self-monitoring of blood glucose (at least once daily) among adults with diabetes in the United States and Montana, 1995 and 2001.

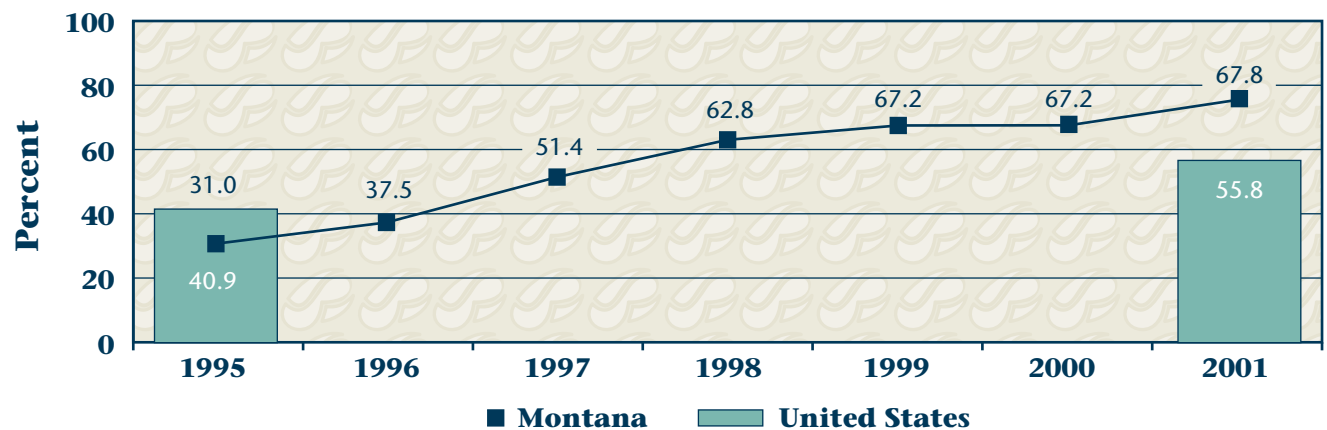


Figure 4. Age-adjusted rates of annual influenza immunization among adults with diabetes in the United States and Montana, 1995 and 2001.

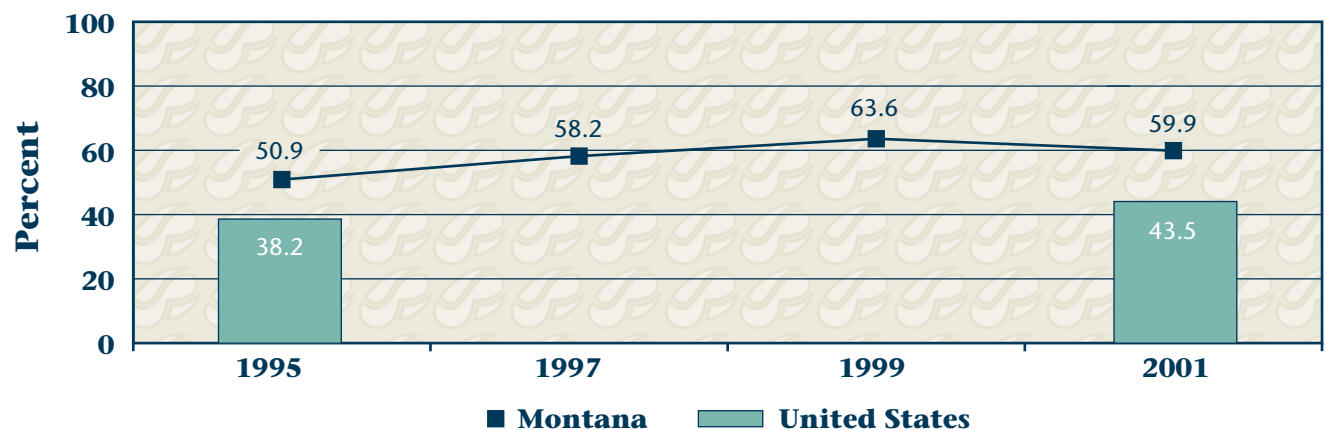
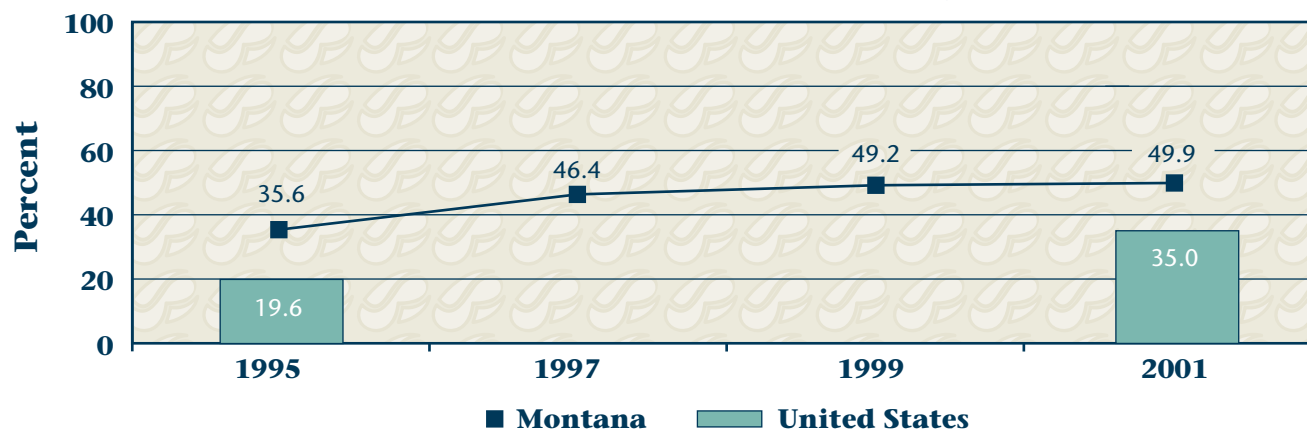
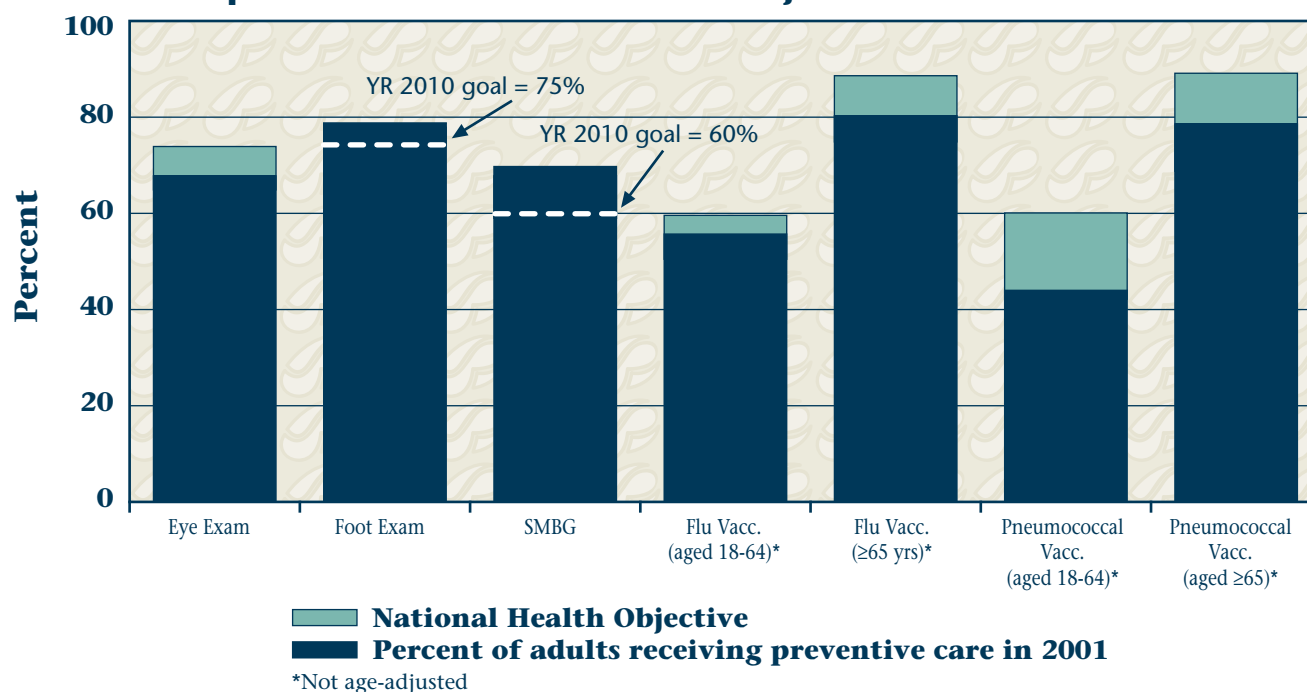


Figure 5. Age-adjusted rates of pneumococcal immunization among adults with diabetes in the United States and Montana, 1995 and 2001.



In Montana in 2001, the rates of annual foot examination and SMBG exceeded the year 2010 national health objectives (Figure 6). However, the rates for annual retinal examination, influenza vaccination, and pneumococcal vaccination have not yet reached the levels recommended by the national health objectives.

Figure 6. Percentage of adults with diabetes receiving preventive care in 2001 compared with the national health objectives for 2010–Montana.



DISCUSSION

Effective interventions are available that can prevent or delay the development of diabetes complications. The findings in this report indicate that the percentage of persons with diabetes who received preventive care services increased from 1995 to 2001. Consistent with previous reports,^{5,6} the rate of the use of preventive care practices and vaccination coverage among persons with diabetes in 2001 was less than recommended, so improvement is needed in all areas of diabetes care to achieve the national health objectives. In Montana in 2001, the rates of preventive care practices and SMBG exceeded the rates in the U.S. in all categories.

The findings in this report are subject to at least five limitations. First, these analyses included only the noninstitutionalized population and cannot be generalized to persons residing in nursing homes and other institutions. Second, self-reported data are subject to recall bias, and preventive care practices or vaccination levels might be underreported or overreported. The extent to which reporting bias might affect these results is unknown. Third, BRFSS is a telephone survey, and rates of diabetes-related preventive care practices presented in this report might be overestimated slightly because persons of low socioeconomic status are less likely to have telephones and less likely to receive preventive care. Fourth, the median response rate was 68.7% for 1995 and 52.1% for 2001; however, compared with census data, BRFSS data have minimal bias (BRFSS data quality report; available at <http://www.cdc.gov/brfss>). Finally, the analysis included only 35 states and might not be representative of the entire country. However, the rates of both influenza and pneumococcal vaccinations were assessed for all states in 2001 and showed little difference from the results in this report (CDC, unpublished data, 2001).

Many organizations and health care professionals in Montana have targeted their efforts to improve the level of diabetes care and to increase access and the quality of diabetes education. These efforts have contributed to the improved level of preventive care for Montanans with diabetes over the past seven years. However, the findings in this report emphasize the challenge to continue to improve care for Montanans with diabetes to reach the 2010 national health objectives and, most importantly, to reduce the morbidity and mortality associated with diabetes.

[This report was adapted from a recent publication by J Lojo, MPH, NR Burrows, MPH, LS Geiss, MA, EF Tierney, MPH, J Wang, MPH, MM Engelgau, MD. Preventive care practices among persons with diabetes – United States, 1995 and 2001. MMWR 2002;51(43):965-969.]

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1. The Diabetes Control and Complications Trial Research Group. The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. *N Engl J Med* 1993;329:977–86.
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5. Centers for Disease Control and Prevention. Levels of diabetes-related preventive care practices—United States, 1997–1999. *MMWR* 2000;49:954–8.
6. Centers for Disease Control and Prevention. Influenza and pneumococcal vaccination rates among persons with diabetes mellitus—United States, 1997. *MMWR* 1999;48:961–7.
7. U.S. Department of Health and Human Services. Healthy people 2010. 2nd ed. With understanding and improving health and objectives for improving health (2 vols). Washington, DC: U.S. Department of Health and Human Services, 2000.

8. Center for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Diabetes Translation web site accessed on January 7, 2004, (<http://www.cdc.gov/diabetes/statistics/preventive/index.htm>)

IMPAIRED FASTING GLUCOSE (IFG) THRESHOLD LOWERED TO 100 mg/dl

There is no unique biological marker that clearly separates individuals with diabetes from non-diabetic individuals. So epidemiologists define the blood glucose cut-off values for diabetes based on risk for developing diabetic retinopathy. Because the incidence of retinopathy increases above a fasting blood glucose (FBG) of ≥ 126 mg/dl, the Expert Committee on the Diagnosis and Classification of Diabetes (American Diabetes Association) lowered the cut-off for diabetes in 1997 from 140 to 126 mg/dl. At that time the Committee also suggested that individuals with a fasting blood glucose between the upper limit of normal and the cut-off for

diabetes be considered to have Impaired Fasting Glucose (IFG). Just as Impaired Glucose Tolerance (IGT) identifies individuals with 2-hour post glucose load values between the upper limit of normal and diabetes (140-199 mg/dl) who are at an increased risk of developing diabetes, those with IFG are also at risk for diabetes. Because the fasting glucose is more convenient and more reproducible from day to day, most clinicians use fasting sugars to find people at increased risk for diabetes. In 2003, the Committee reconsidered the cut-off point for IFG based on several new analyses and recommended that it be lowered to 100 mg/dl to optimize the sensitivity and specificity for predicting future diabetes¹. The new diagnostic criteria are displayed in Table 1.

Reference:

1. The Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. Follow-up Report on the Diagnosis of Diabetes Mellitus. Diabetes Care 2003; 26: 3160-3167.

Table 1. Current diagnostic thresholds for diabetes and lesser degrees of impaired glucose regulations.

TEST		
	Fasting Plasma Glucose	2-h Post Glucose
Normal	<100 mg/dl	<140 mg/dl
Impaired Fasting Glucose	100-125 mg/dl	–
Impaired Glucose Tolerance	–	140-199 mg/dl
Diabetes*	≥ 126 mg/dl	≥ 200 mg/dl
When both tests are performed, IFG or IGT should be diagnosed only if diabetes is not diagnosed by the other test.		
*A diagnosis of diabetes needs to be confirmed on a separate day.		

CARDIOVASCULAR HEALTH SUMMIT, BIG SKY, MONTANA FRIDAY APRIL 2, 2004

The Montana Cardiovascular Health Program's annual Cardiovascular Health Summit will be held on Friday, April 2, 2004 at Big Sky. This year's conference will include sessions addressing primary and secondary prevention of cardiovascular disease and related-risk factors. The faculty and topics are listed below. For more information or to register please contact Gail Brockbank at 406-442-4141 (gialb@mt.net).

- ✓ **Implications of Childhood Obesity on Cardiovascular Disease Risk in Adulthood**
Gerald Berenson, MD - Tulane University School of Public Health and Tropical Medicine
- ✓ **JNC 7 Guidelines: What do the new guidelines mean to practitioners?** Larry Dent, PharmD, BCPS - University of Montana School of Pharmacy
- ✓ **Eat Well and Move Well as a Community**
Ellen Brown, MPA - Missoula City-County Health Department
- ✓ **Tobacco Prevention: The health care provider makes a difference** Dearell Niemeyer, MPH - Tobacco Technical Assistance Consortium, Emory University & Robert Moon, MPH - Northwest Health Partners, LLC
- ✓ **Congestive Heart Failure: Treatment and utilization of treatment** Bradley Berry, MD - The International Heart Institute of Montana
- ✓ **The Mediterranean Diet and Prevention of Heart Disease** Frank Hu, MD, PhD, MPH - Harvard School of Public Health
- ✓ **Traditional Use Versus Commercial Abuse of Tobacco in Indian Country** Anthony Herrera - In-Care Network & Lori New Breast - Blackfeet Tribal Health Program
- ✓ **Preventing the Next Heart Attack: Principles in practice** Paul LaVeau, MD, FACC - St. Vincent Healthcare

- ✓ **Diabetes Prevention Program Lifestyle Intervention - Implementation of Weight Loss and Activity** Lisa Testaverde, MS - University of Colorado Health Sciences Center
- ✓ **New Findings About Fat and the Metabolic Syndrome: Implications for clinical practice** James May, MD - Vanderbilt University School of Medicine
- ✓ **Worksite Wellness Programs: Do they affect cardiovascular health and the bottom line?** Larry Chapman, MPH - Summex Corporation
- ✓ **Cessation, Addiction, Alibis, Aggravation, Absolution and Amnesty** Richard P. Sargent, MD - Family Health Clinic, Helena HealthCare
- ✓ **Heart Disease, Diabetes and Cancer: Three destinations on the same road** Tim Byers, MD, MPH - Department of Preventive Medicine and Biometrics, University of Colorado School of Medicine

WHAT IS THE MONTANA DIABETES PROJECT AND HOW CAN WE BE CONTACTED:

The Montana Diabetes Project is funded through a cooperative agreement with the Centers for Disease Control and Prevention, Division of Diabetes Translation (U32/CCU822743-01). The mission of the Diabetes Project is to reduce the burden of diabetes and its complications among Montanans. Our web page can be accessed at <http://ahec.msu.montana.edu/diabetes/default.htm>.

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